

Figure 1 - FLUPSY

Provisional Patent Application

AN INTEGRATED SYSTEM FOR SHELLFISH PRODUCTION: Encompassing
Hatchery, Nursery, Growout, and Broodstock Conditioning Phases

Inventor: Russell Patton Davis June 20, 2000

FIGURE 1 - FLUPSY (Floating Upweller System)

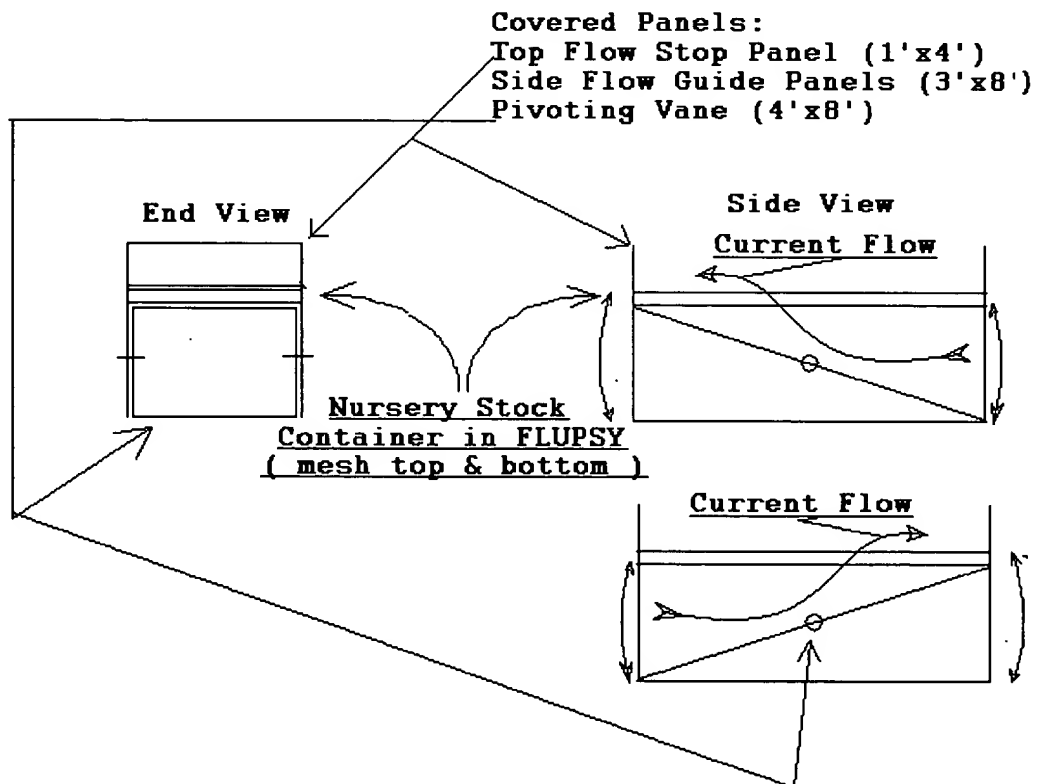


FIG. 2 - BUPSY

Provisional Patent Application

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FIGURE 2 - BUPSY (Bottom Upweller System)

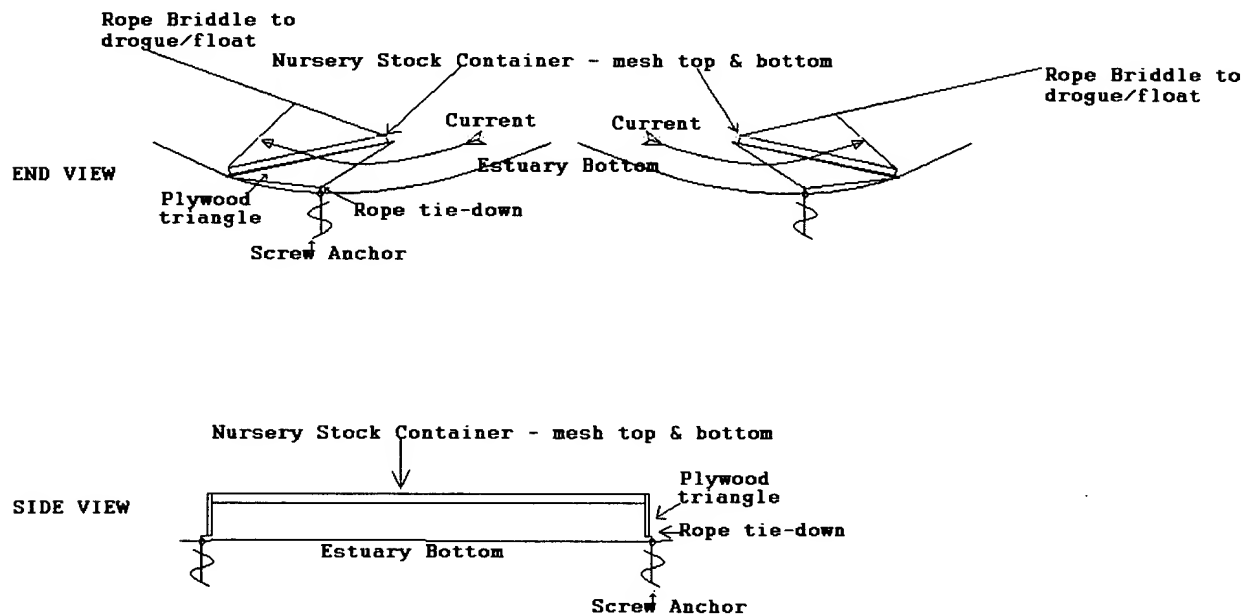


FIG. 3 - Nursery Stock Container

Provisional Patent Application

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Figure 3 - Nursery Stock Container - Mesh top and bottom, with solid and compressible shims, used in both FLUPSY and BUPSY

TOP VIEW - Two ridged frames, each covered with mesh (sized to retain shellfish), bolted together.

The frames are seperated with a combination of ridged and compressible (closed cell foam) shims so that the shellfish are gently but securely held by the assembly.

SIDE VIEW

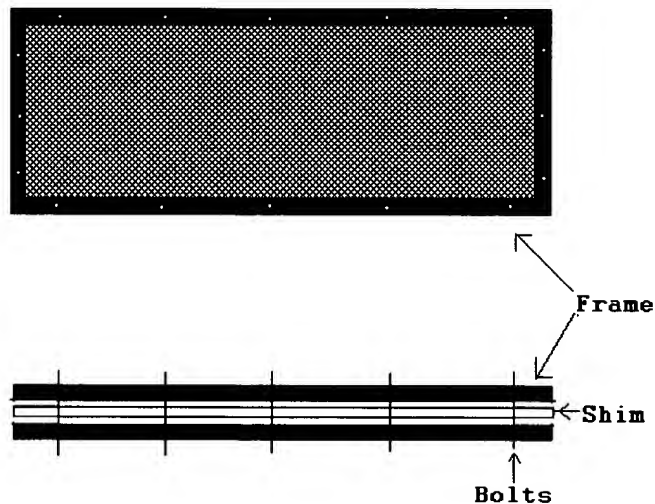


FIG. 4 - End View of Spawntoon

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Figure 4 - End View of Spawntoon Unit
consisting of FLUPSY sub-units and hatchery pools

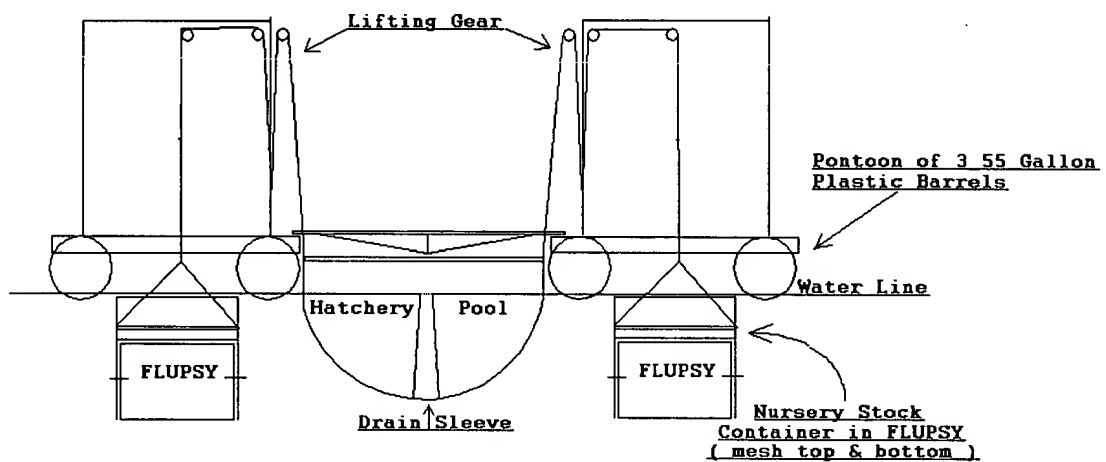


FIG. 5 – Drain Device for floating hatchery live-well

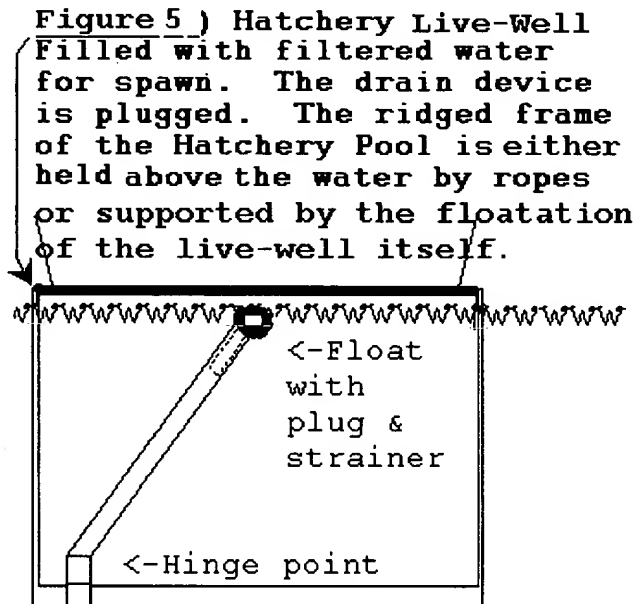


FIG. 6 – SpawnToon Motorboat "The Mama Cass Ostrea"

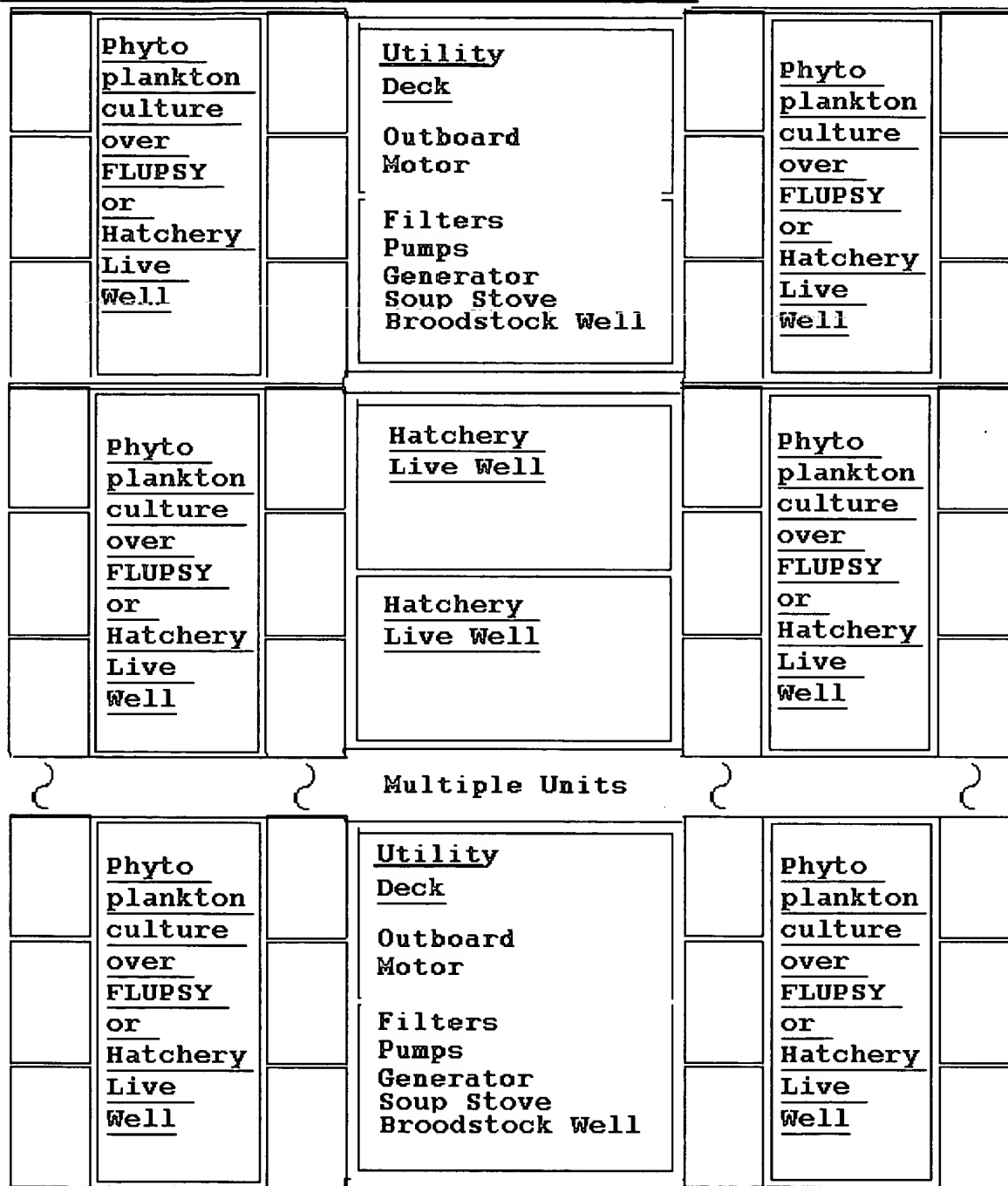


FIG. 7 – Phytoplankton Culture: Culture Bag w/fittings, Stretcher resting on two pontoons

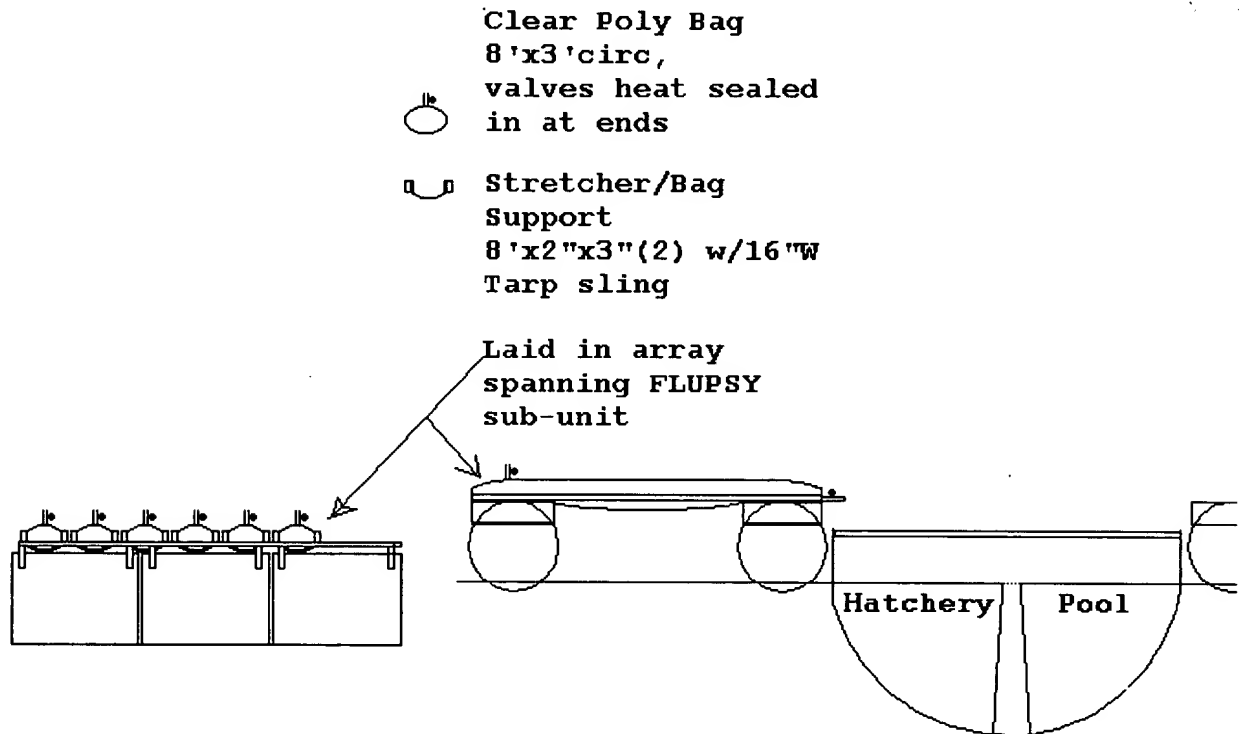


FIG. 8 – Hatchery Live Well Drain-Sleeve and Spawn Catcher

Figure 8A) Hatchery Pool
Filled with filtered water for spawn. The drain device is plugged. The ridged frame of the Hatchery Pool is held above the water by ropes.

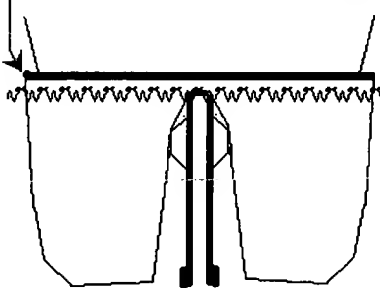


Figure 8B) Hatchery Pool being drained.
The plug is replaced with the Spawn Catcher assembly. The lifting ropes are weighted with buckets of water so that the pull on the lines will cause the water to drain through the Spawn Catcher. The drain sleeve accords down so the drain opening remains just under the surface of the water.

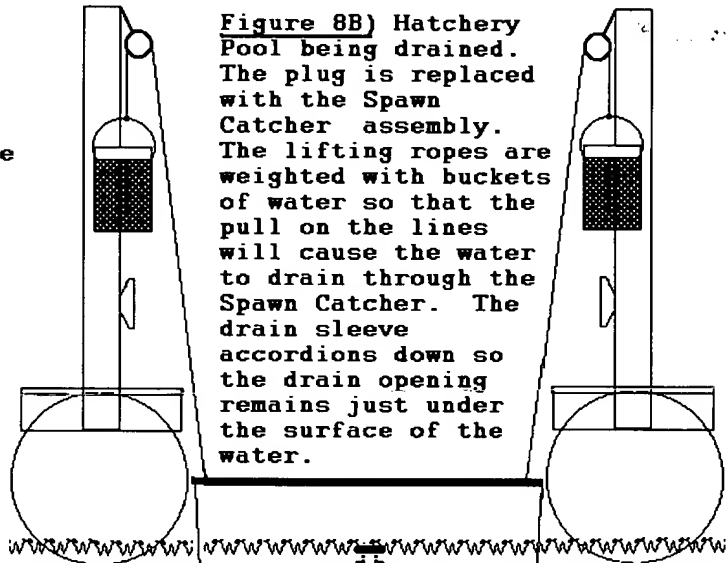


Figure 8D) Hatchery Pool lifted out of the water for cleaning, sunning, and maintenance.
The drain pipe is unpinned from the collar affixed to the pool drain sleeve so the spawn can be recovered. Dead spawn and feces on the bottom do not drain out until the drain pipe and Spawn Catcher assembly are unpinned and removed. The spawn are rinsed out into a filled pool waiting for them.

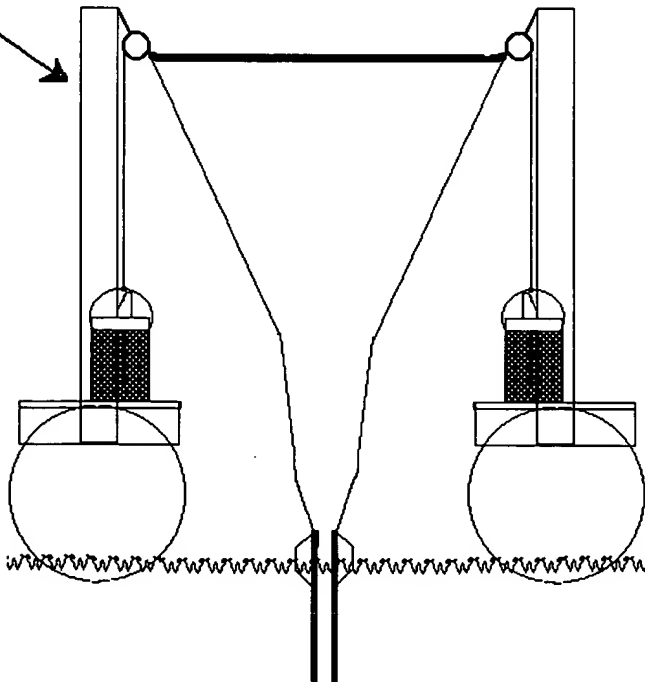
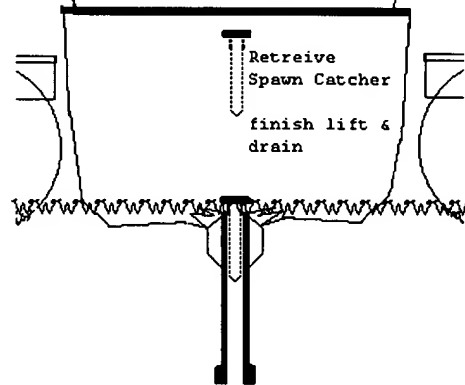


FIGURE 8C)



Application for Patent on "An Integrated System For Shellfish Production"

10/2/01 10:35 PM Russell P Davis (757)340-0651

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FIG. 9 - Outboard Motor Mount (with DAVIS NOZZLE) slung underneath SpawnToon deck,
Profile of the Tubular Shroud surrounding the propeller and bolted to the cavitation plate

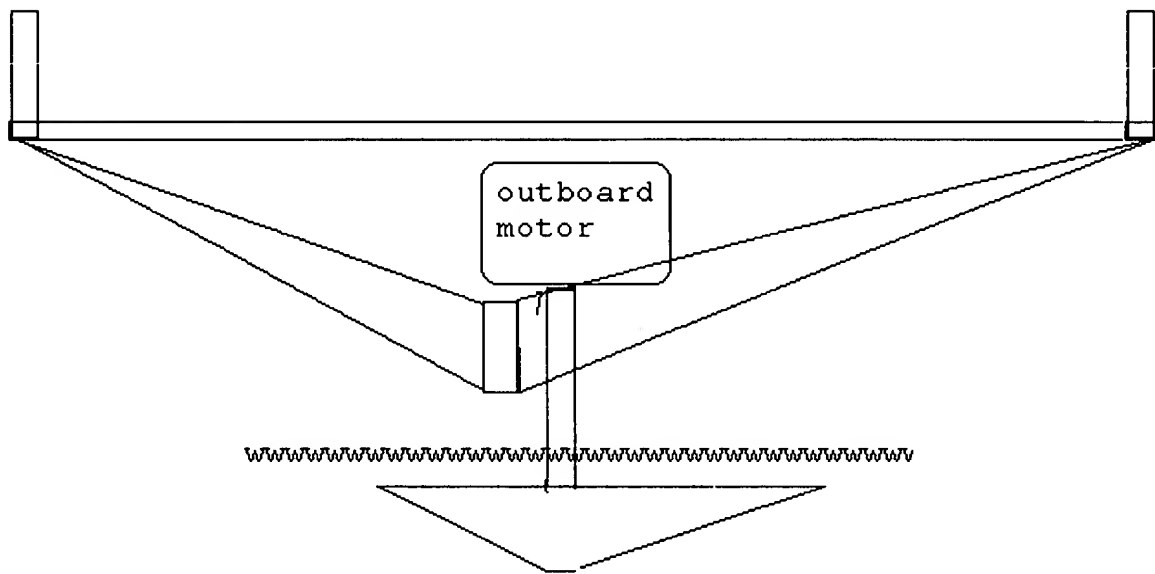
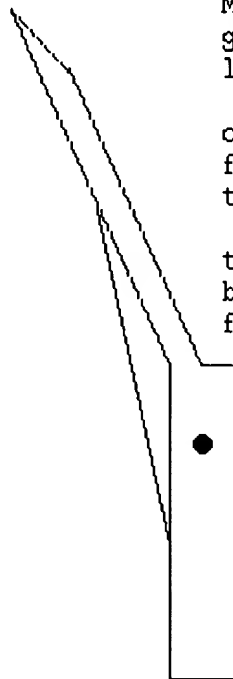


FIG. 10 - Davis Harpoon anchor

Figure 10) DAVIS HARPOON ANCHOR



Made from 2 inch dia.
galvanized pipe 36 inches
long

one half the pipe is cut
from one half the length
to form a trough

the trough portion is
bent outward and cut to
form a point on the end

a bolt for
attaching the
anchor line is
placed in tube

anchor is washed
into place much
like a piling or
bulkheading

Figure 11 A) TWWELLER : side view

Two Way Upweller/Downweller Shellfish Growing Device

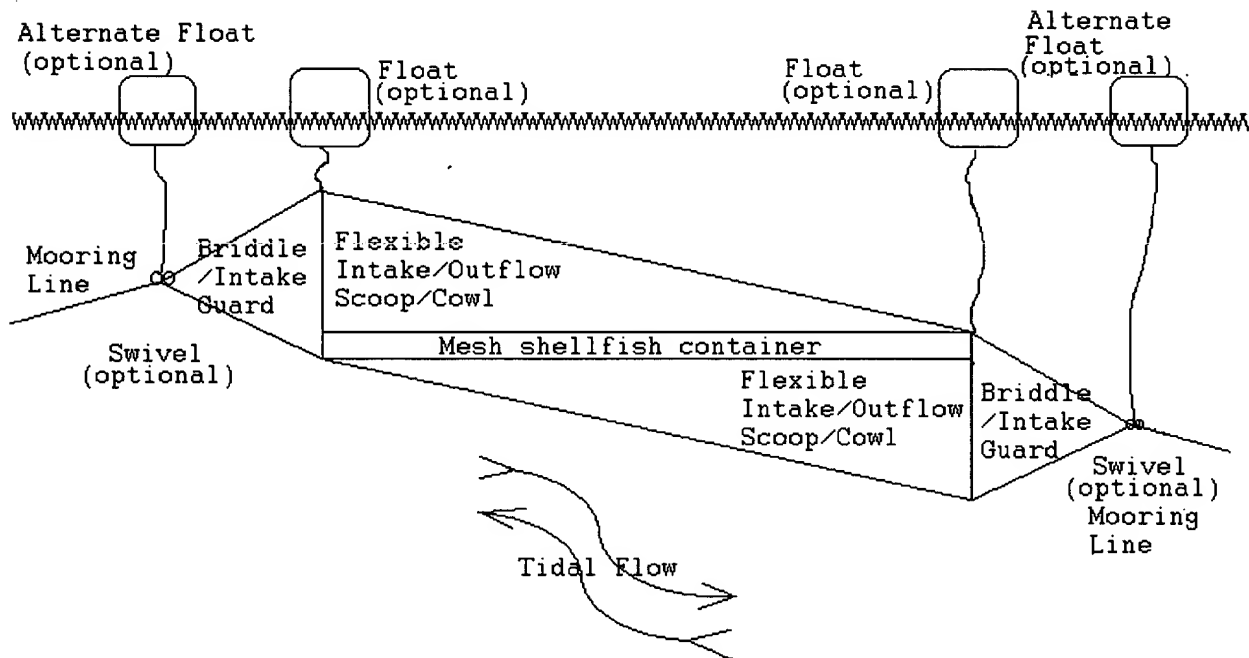


FIGURE 11 B) TWWELLER: end view

Rotating Option
on swiveled mooring

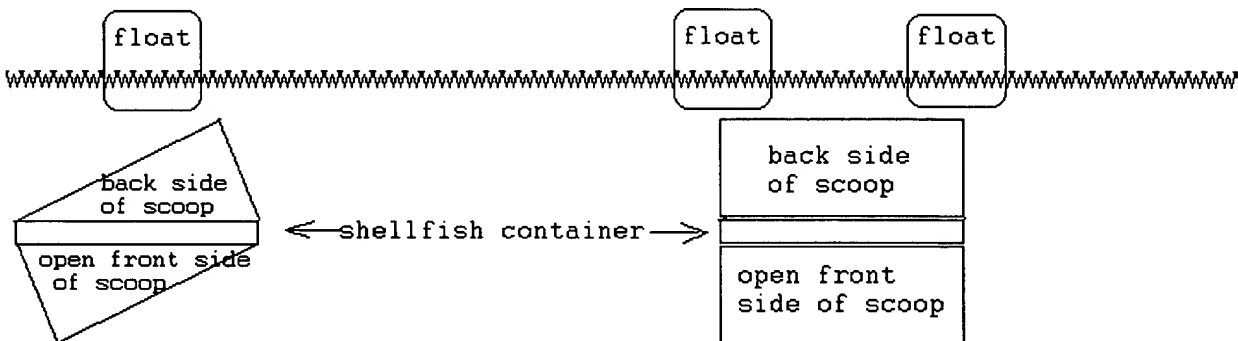


FIG. 11 - TWWELLER

FIG. 12 – Float-Drogue

Figure 12) Float-Drogue

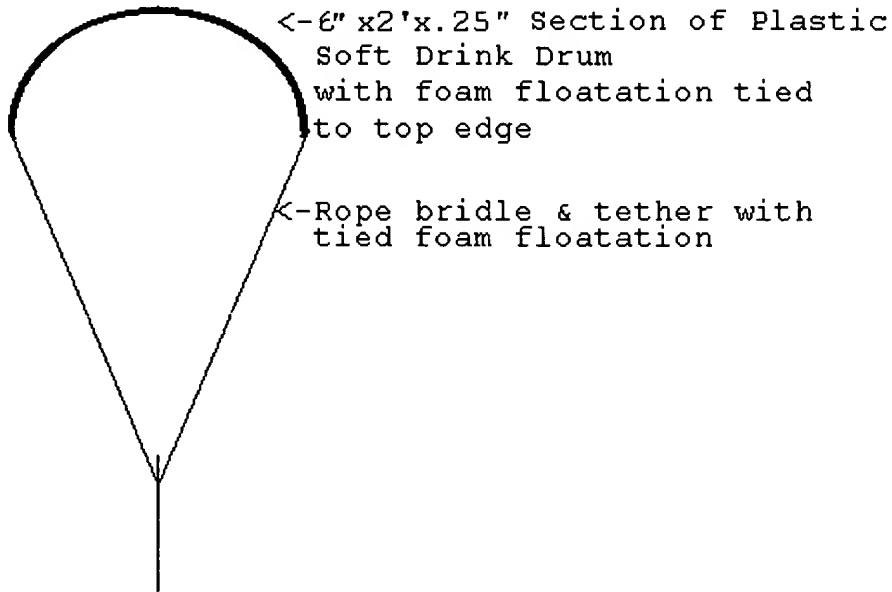


FIG. 14 – Resuspension Drag Foil of CLAIM 17

Figure 14)

Resuspension Drag Foil

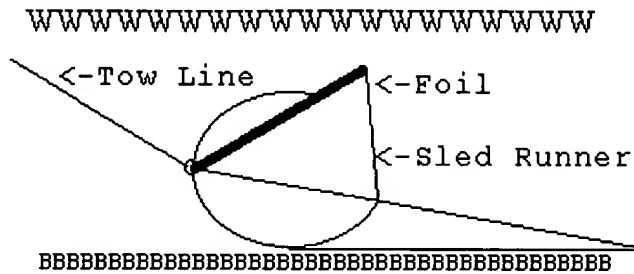
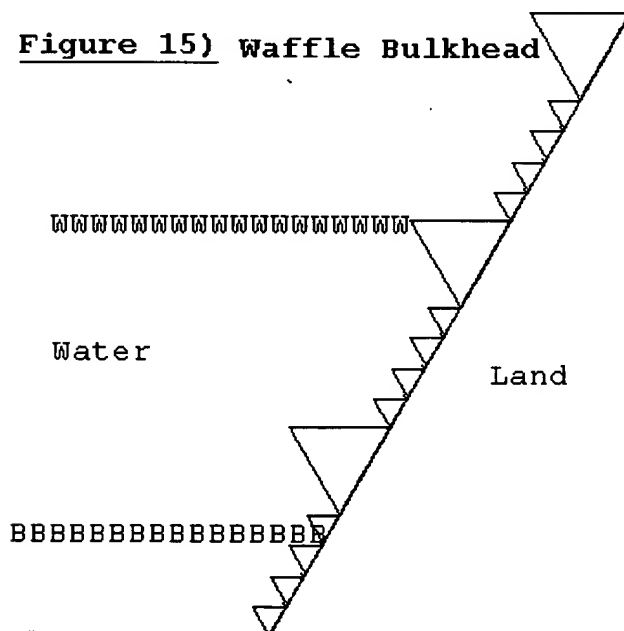


FIG. 15 – Waffle Bulkhead

Figure 15) Waffle Bulkhead



Shellfish Reef Geo-Structures of Spartina Grass and Clam Predator Exclusion Net

Salvaged
Spartina
Marsh

Sand Flat with Mobile Sand

FIG. 17 – BUPSY of CLAIM 8 (low current or below channel)

**Figure 17) BUPSY for lower current
or under possible boat traffic**

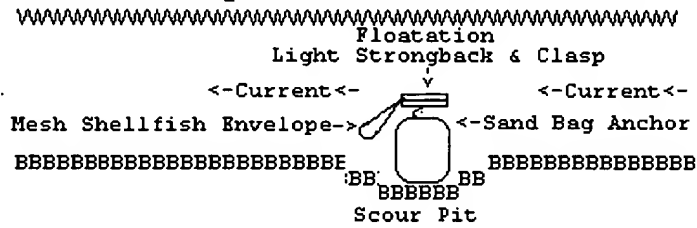


FIG. 18 – Shellfish Hatchery-Nursery Container of CLAIM 16: Set of two nested open top
Self Cleaning screen set of CLAIM 7 used by the Marsupium

Figure 18)

**Shellfish Hatchery/Nursery
Container Assembly Consisting of
Two Nesting Open-Top Mesh
Covered Box Frames**

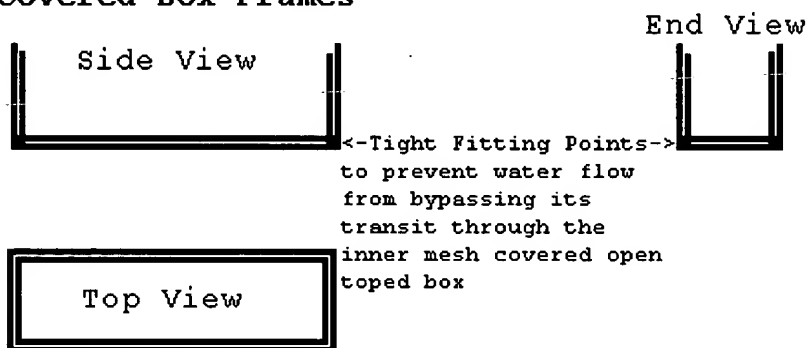


FIG. 19 – Shellfish: SAV Polyculture Groin Substitute of CLAIM 18
Figure 19)

**Living Groin made from a bed of Shellfish
Predator Exclusion Net, & Sub-aquatic
Vegetation**

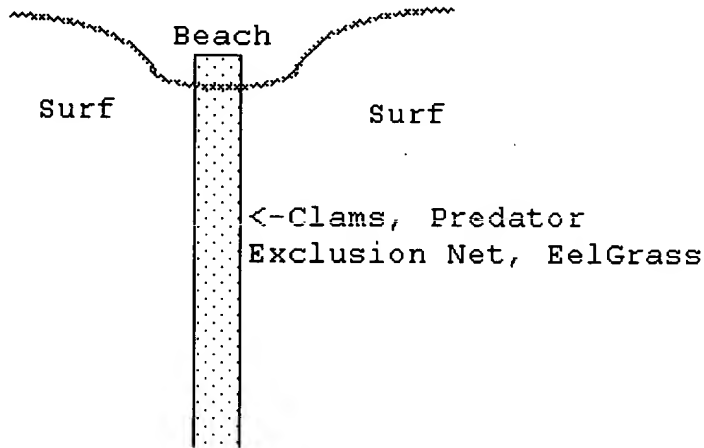


FIG. 20 Foil Array of CLAIM 10 used for current powered directional sediment Transport

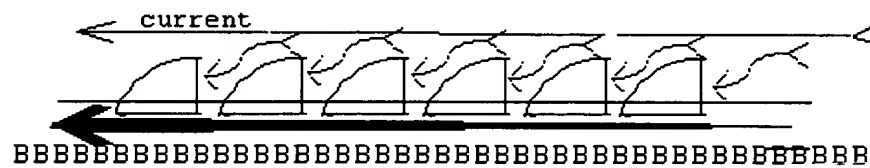
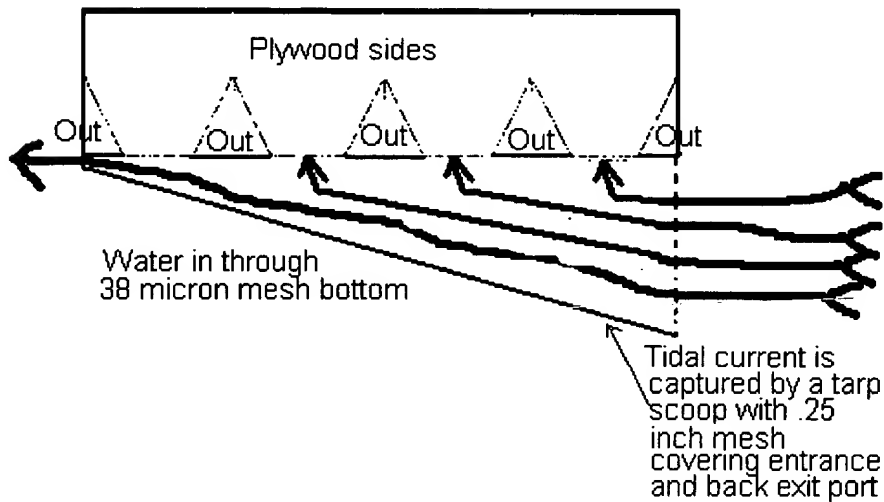


FIG. 21 Grounding Tolerant FLUPSY scoop of CLAIM 9 servicing a crenellated Marsupium.
Side View



Water out through triangular ports in the side
after passing through a 38 micron mesh crenallation panel
Plywood panel separates inbound water from outbound
water in the crenallation